Components	ТРМ	RCM
Focus on important machines	no	Yes
Creation of inspection methods for the equipment	no	Yes
Individual determination of the maintenance strategy	no	yes
Tips on the use of diagnostic methods	yes	yes
Creation of spare part management	no	only general tips
Instructions on inclusion of sub- companies	yes	No
Tips for constructive modifications	yes	Yes
Instructions for formation of redundancies	no	Yes
Tips for the speedy replacement of construction groups	yes	Yes
Description of maintenance tasks	Inspection and servicing (not including repairs)	Inspection and servicing (not including repairs)
Tips for increased productivity	no	No
Determination of time needed	no	No
Determination of implementation responsibility	Yes	Yes
Determination of implementation intervals	Yes	Yes
Employee instruction	Yes	yes
Further training for employees	Yes	yes
Adaptation of construction organization	No	No

FIG. 1 (PRIOR ART)

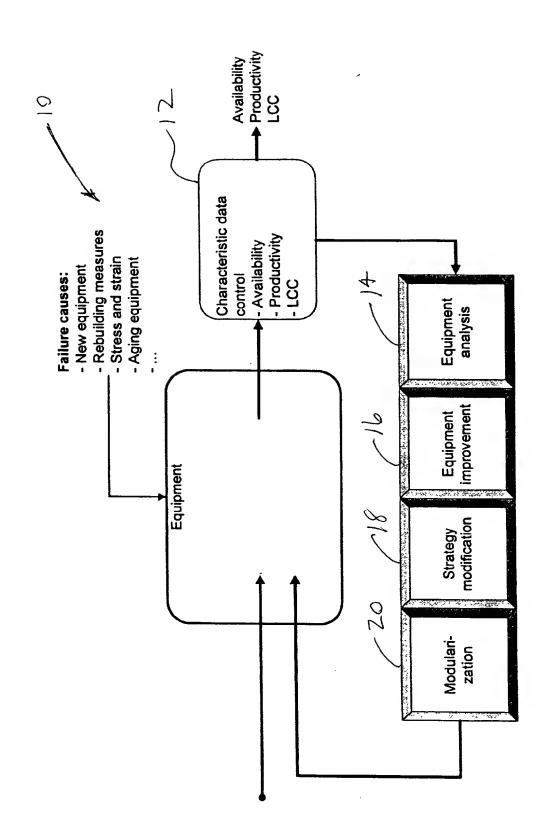
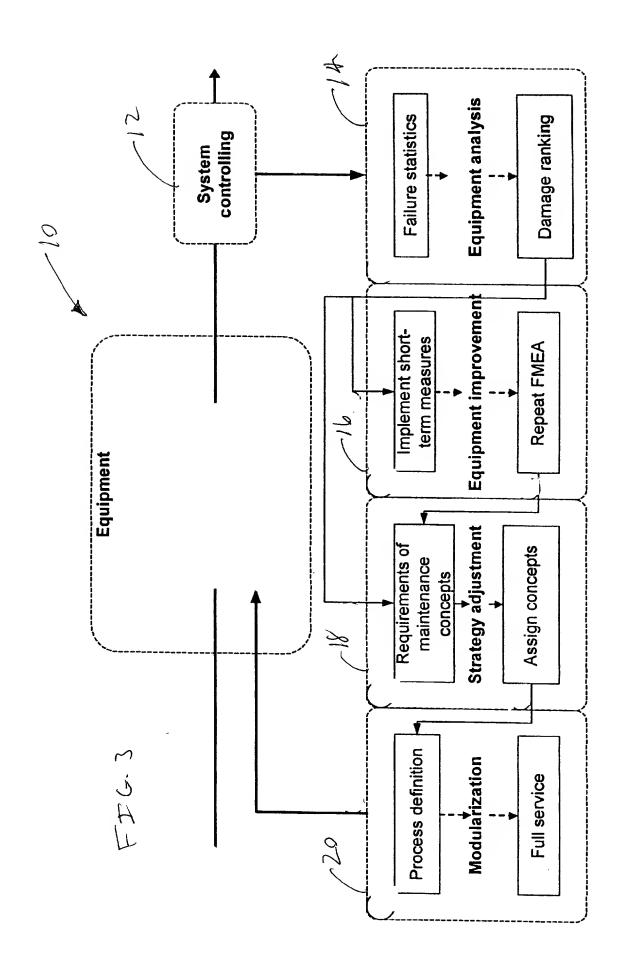
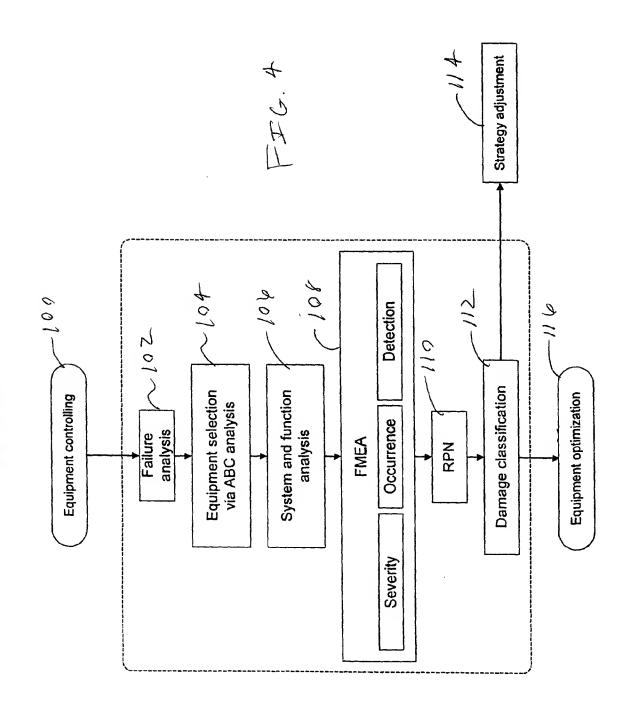
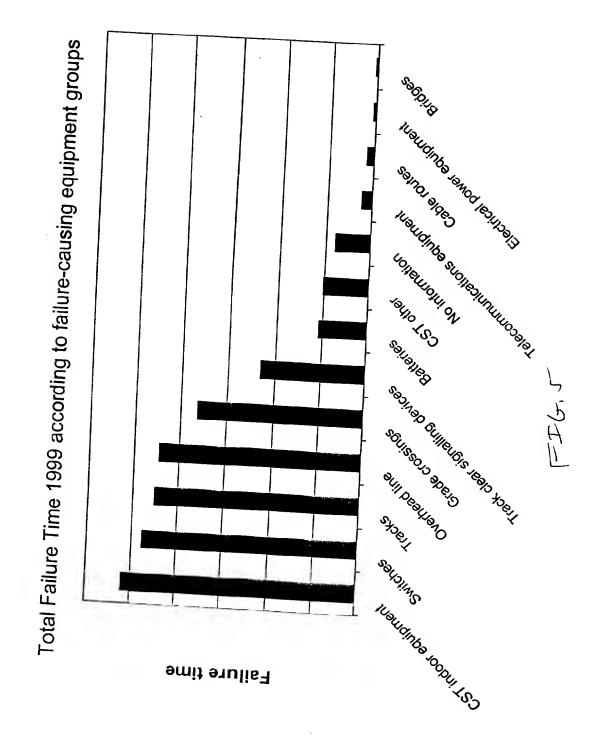


FIG. 2







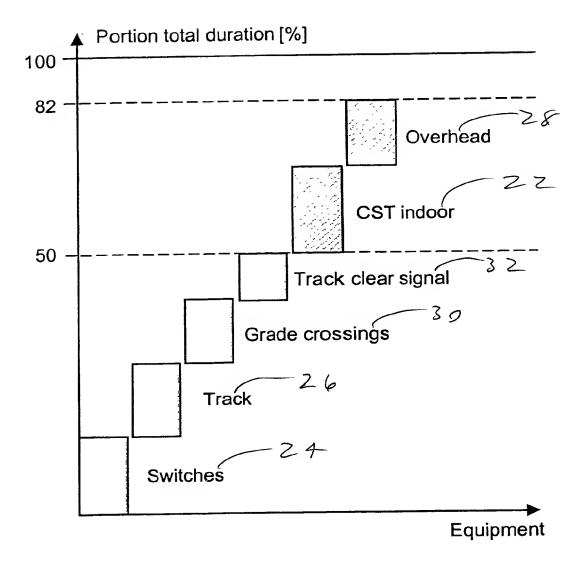


FIG. 6

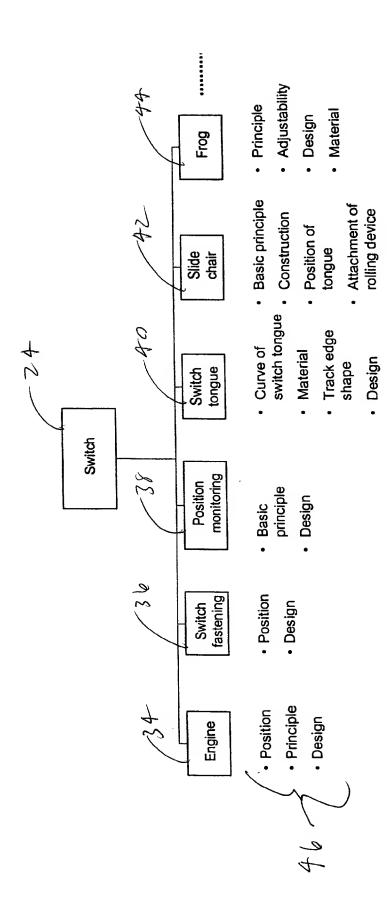
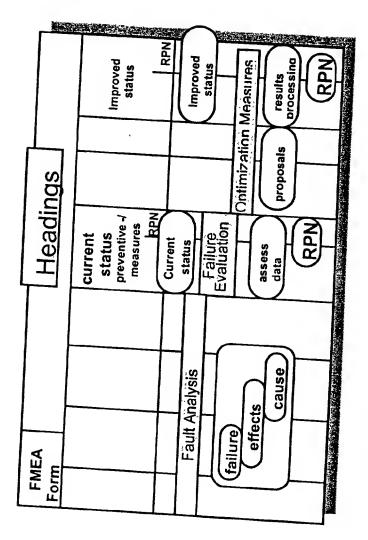


FIG. 7



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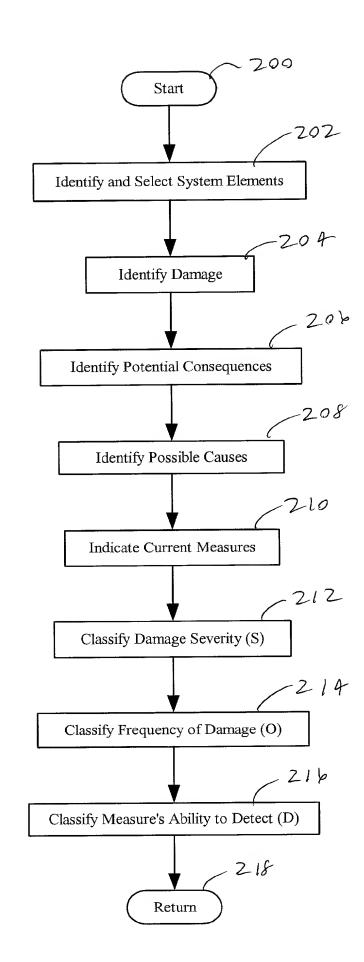


FIG. 9

Mication	Preventive and B RPN Inspection Measures	Measurement of passage groove	Acceptance inspection for maintenance work by external companies		
Slass	0		e e		
Current Damage Cause Evaluation and Classification	Potential Causes (wear & tear)	Bent switch tongue	Assembly defect in control mechanism		
mage	S	4	o	. 2	
Current Da	Potential Results	Collision alarm through approaching of switch tongue	switch tongue Inning up switch tongue	Wheels strike the switch tongue (overriding of the rail)	
	2	-	8	33	1 1 1 1
	Damage Description	Passage groove too small		·	

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	RPN	360	210	! ! !	
	ā	9	*		
lication	Preventative and Inspection Measures	Measurement of passage groove	Acceptance of the repair by an outside company		
lassif	0		• 0		
Current Damage Cause Evaluation and Classification	Potential Causes (wear & tear)	Bent switch tongue	Assembly defect in control mechanism		
nage.	O		O	\ `	
	Potential Results	Collision alarm through approaching of the switch tongue	Broken switch tongue due to running up against the switch	Wheels strike the switch tongue (overriding of rail)	
	2		8	3	1
	Damage Description	Passage groove too			

FIG. 11

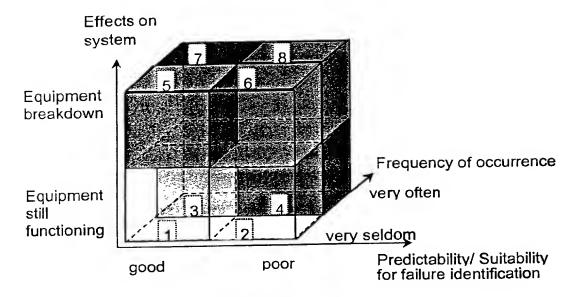


FIG. 12

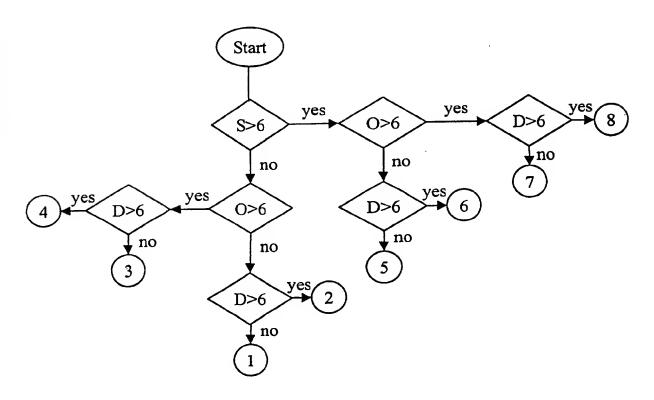


FIG. 13

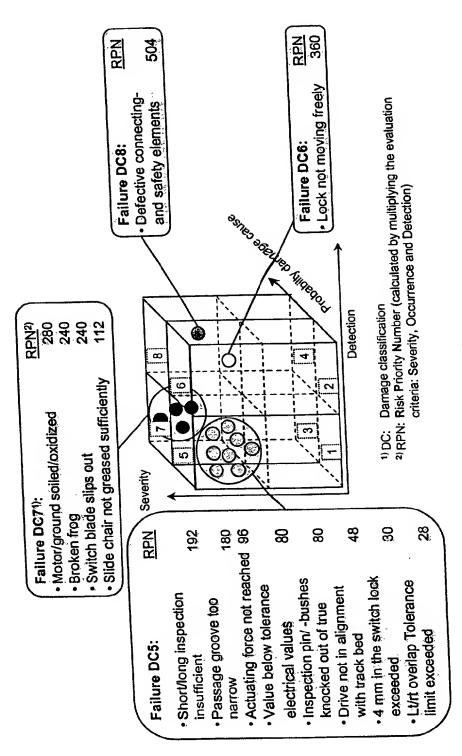
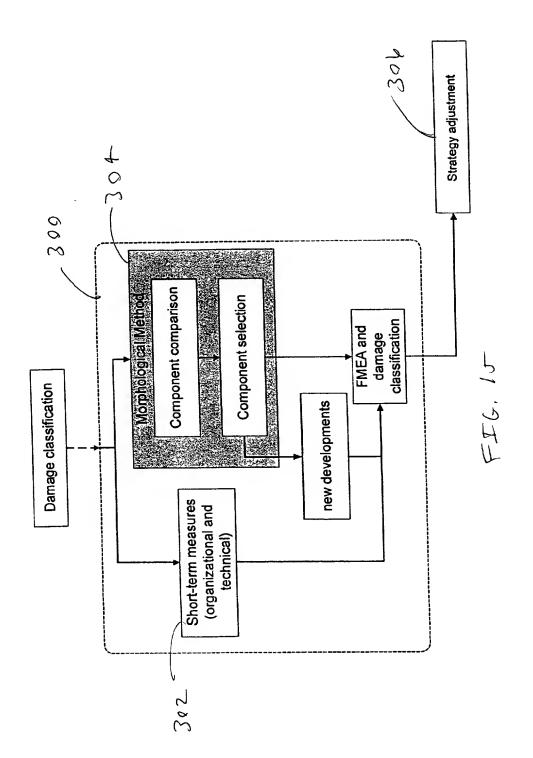
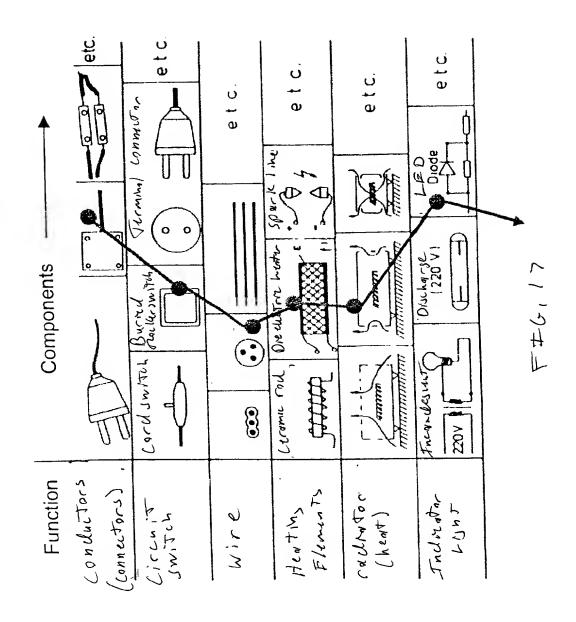


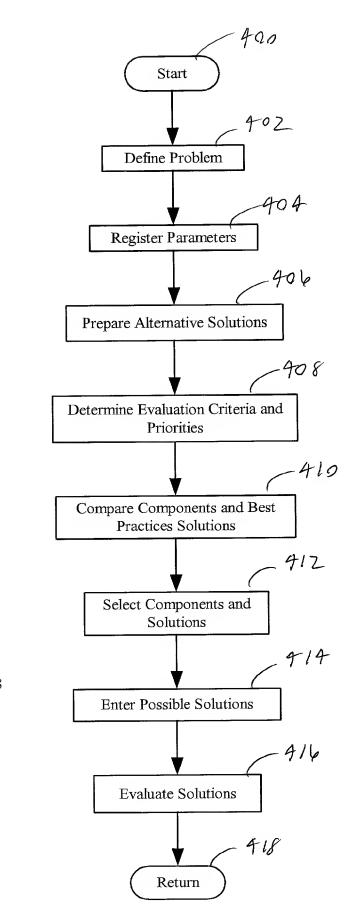
FIG. 14



Š.	Equip- ment	Problem	Measure Proposal from FMEA Workshop	In charge	Date	Comments
1.1	Switch	Stiffness of switch in Equippin interlock or due to with latch inadequately roller slice thairs systems	Equipping of the switches with latch fastenings and roller slide chairs in critical systems	Mr. Schmitz 06/2001	06/2001	Budget of DM 50,000 authorized by management
1.2	1.2 Switch	Defective connecting and locking elements	Defective connecting Use self-locking transmission Mr. Schulz and locking elements	Mr. Schulz	12/2001	Only No. 237 screws to be used

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F1G. 18

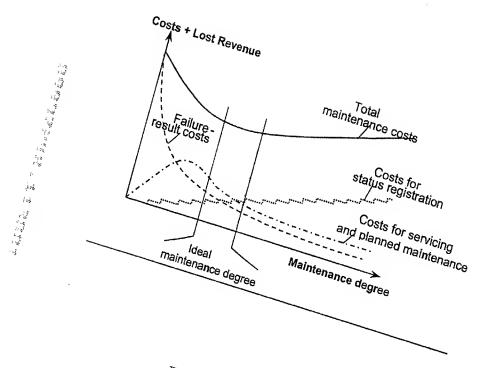


FIG. 19

	Track shape	R 65	UIC 60
Basic	Travel surf. inclinat.	Rails with asymmetrical head with inc. 1:40	Normal ralls with 1:40 inclination
	Geometrical shape	Circular arc switch	Cothold switch
	Pos.	Interior drive (Integrated into tie)	Drive on outside (integrated into the)
	. Basic princ	Electrical	Locally set mechanically
Drive	Str.shape	Electromech, with toothed rack	Electrohydraulic power transmission
	Design	(●) Modular design	Variably adjustable
Actuating force transmis	Basic princ.	Single drive	Central drive with hydraulic power transmiss.(Hydrolink)
Locking	Pos.	Fastening on Inside	Fastening on outside in fastening tie
	Str. shape	Low-maintenance, fastening)	Sliding damp fastening
Safety Interlocking	Basic princ.	Interlocking of tongue tester in drive	Tongue connector rod electrically monitored
12101181110117	Basic princ.	Electromech, tongue stat. discrep. monitor	Limit switch (French/Czech system)
	Peak fastening version	Status tester in drive	
Stat, discrep, monitor.	Medium fastening version	R=500 Tongue tester	
	Str.	Without temp. balancing poss.	New tester rod
Clear signal	Basic princ.	Axlecounter	TOOHs bond wire

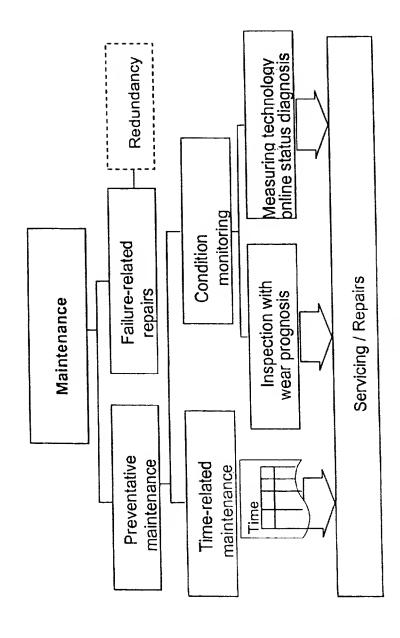
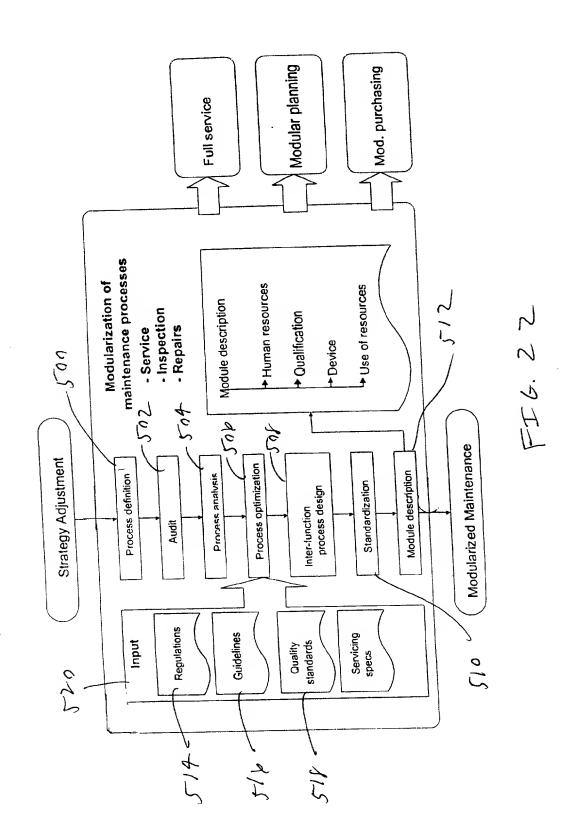


FIG. 21



			remorks						
date:			module						
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		Tool Time							
	1	Descende Time	: :						-
We of her	, Mac	Time Time Travel Time Time Time Time Time Time Time Time							(
		Travel Time							•
		Loce							
			1122						
	9.4		(Bayes)						
Andit Sheet Nome	Module description		かけいれ						
Andit	rpeW Jew		substitute pativity projects						

FIG, 23

				Switches	hes					-	
			Mechines.	Module time		-	imatimita acc; to load codes:	acc: to lo	sepoo.pe		
Module number	Module	Module contents	davicae, additional personnel	unit (Format minute)	number or employees / quetifications	T. T. Wol	CST 92	CST 92 Tw 2:	CST 83 Tw 3	CST PS Tw 4	Bitt of quantities
INWE 300.1.93.3 4	Switch 190 to 300 electr. (Time timit 1) [St]	Single switch with electric drive radius 190 to 300 m maintenance, inspection, functional check and general details acc. to DS 692.03 Appendix 02 Appendix 03]	11 Mai	1 Wmech (Certif. acc. to 821,2005) 1 Wmech				-	-	Single switch 1 electric drive 1so joints, track connection cables, meshing and grounding 1 peek fastening switch healing system
300.2 42 1 2 43 3 4	Switch 190 to 300 electr. (Time limit 2) [St]	Single switch with electric drive radius 190 to 300 m maintenance, inspection, functional check and general detaits acc. to DS 992 03 Appendix 02 Appendix 03		4	1 Winech (Certif acc to 821,2005) 1 Winech		2	2	2	2	Single switch electric drive tax joints, track connection cables, meshing and grounding 1 peak tastening switch healing system
INWE 300.3.93 3 4+A1	Switch 190 to 300 electr. (Time limit 3) [St]	Single switch with electric drive radius 190 to 300 m maintenance, Inspection, 1 unctional test and general designs acc to 10 Sel2.03 Appendix 02 Appendix 03 Tw acc. to 821 2005	Trackway messuring instruments	رن رن	with proven 2-year leating work of measuring instrument (621,2005) 1 Winech (Certif acc. to 621,2005) 1 Winech				е	e .	Single switch 1 electric drive 1so joints, track connection cables, meshing and grounding 1 peak fastening switch heating system

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Components	ТРМ	RCM	Modular- ization
Focus on machines	No	Yes	Yes
Creation of inspection methods for the equipment	No	Yes	Yes
Individual determination of the maintenance strategy	No	Yes	Yes
Tips on the use of diagnostic methods	Yes	Yes	Yes
Creation of spare part management	No	General tips	Yes
Instructions on inclusion of sub-contractors	Yes	No	Yes
Tips for constructive modification	Yes	Yes	Yes
Instructions for redundancy formation	No	Yes	Yes
Tips for the speedy replacement of construction groups	Yes	Yes	Yes
Description of maintenance tasks	Inspection + service (not incl.	Inspection + service (not incl.	Inspection + service (not <u>incl</u> .
	repai rs)	repairs)	repairs)
Tips for increased productivity	No	No	Yes
Determination of required time	No	No	Yes
Determination of implementation responsibility	Yes	Yes	Yes
Determination of implementation intervals	Yes	Yes	Yes
Employee instruction	Yes	Yes	Yes
Further training of employees	Yes	Yes	Yes
Adaptation of construction organization	No	no	yes